community hospitals. To avoid this type of procurement failure, most states have adopted various forms of required request laws. These laws are designed to ensure that family members are given the option of donating a relative's organs and tissues. They vary in their specifics from so-called weak request laws requiring only that hospitals have in place policies ensuring that some request was made, to "strong" laws that require formal documentation of requests and responses. Recognizing that these laws are difficult to enforce, changes in policies of the Joint Commission on the Accreditation of Healthcare Organizations and Health Care Financing Administration regulations have been enacted to encourage hospitals to provide support for organ procurement programs.

A failure to obtain consent has been responsible for 40% to 70% of losses of otherwise eligible donors. Three recent trauma center studies have found next-of-kin consent rates of 64%, 57%, and 54%. This is at variance with a recent Gallup poll reporting an 82% favorable response rate to the subject of next-of-kin organ donation. The reasons for this discrepancy are complex and involve cultural differences, professional attitude and interests, and timing. Many believe that requests for organ donation are best made by professionals who are trained to do so and who do not have direct patient care responsibilities. This "team" approach, which may involve social workers, transplant coordinators, and clergy, allows for a well-timed, sensitive inquiry and avoids family perceptions of conflict of interest that may occur when a request is made by the physician who also renders definitive care.

In many patients with lethal head injuries, severe physiologic derangements develop both before and after brain death occurs. The loss of autonomic control and central hypotension (65% of patients), neurogenic pulmonary edema (52%), diffuse coagulopathy or disseminated intravascular coagulation (42%), hypothermia (41%), and massive diuresis (diabetes insipidus) (38%) all may contribute to the reported 15% to 30% incidence of cardiopulmonary death before organ recovery. Despite the severity of abnormalities in these patients, a 77% two-year survival rate for transplanted kidneys, and the excellent results obtained with cardiac transplants support an aggressive approach to physiologic maintenance. The commitment of personnel and resources to the physiologic support of this group of organ donors must be substantial. A lack of interest and skill in managing these problems further contributes to donor organ loss.

An improvement in the current rates of organ procurement will depend on earlier identification and screening of potential donors, the establishment of standards for the monitoring and declaration of brain death, a more carefully timed and sensitive approach to next-of-kin requests, the anticipation and treatment of common donor physiologic derangements, and the education of the lay public and medical professionals regarding the benefits and practice of donating organs.

The time, energy, and knowledge base required to expedite organ procurement usually exceed those of individual treating physicians. Organ procurement agencies were developed in part to help facilitate this process. Legislation passed by Congress in 1986 allowed further restructuring and expansion of regional organ procurement agencies operating either within or independently of hospital systems. Once contacted, organ procurement agencies provide donor eligibility information and medical and immunologic screening and may, if invited, assist the treating physician with obtaining consent and the physiologic support of eligible donors. It should be the responsibility of every physician caring for patients with anticipated fatal neurologic injuries or disease to contact the regional organ procurement agency for information and guidance regarding the procedure for organ donation.

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Surgical Treatment of Chronic Ulcerative Colitis

CHRONIC ULCERATIVE COLITIS with its attendant symptoms and risk of malignant degeneration can be cured by proctocolectomy. A reluctance to accept a permanent ileostomy, however, has often prevented a surgical cure, occasionally with tragic results. The development of continent ileostomy and restorative proctocolectomy—ileal pouch-anal anastomosis—has shifted the balance toward the acceptance of earlier surgical treatment. In recent years, results of these complex operations have improved considerably.

Proctocolectomy with Brooke ileostomy remains the standard against which other operations for chronic ulcerative colitis are measured, though it is the option least commonly chosen by patients. A subtotal colectomy with ileoproctostomy remains a reasonable option in selected patients. Although it does not eliminate the risk of cancer or inflammation in the remaining rectal mucosa, subtotal colectomy does provide excellent functional results with low morbidity. Its use should be considered in patients with marginal sphincter function, an uncertain diagnosis, or advanced cancer. The incidence of cancer in the preserved rectum is about 6%, and rectal removal for recurrent inflammation is necessary in 10% to 15%. The Kock pouch is the most technically demanding option and has the greatest complication rate. Recent modifications in the construction of the nipple valve have greatly reduced the need for late reoperation. The Kock pouch offers advantages to patients who decline the Brooke ileostomy and whose life-style does not allow them ready access to toilet facilities.

The most commonly chosen operation is restorative proctocolectomy. In this procedure, all colonic and rectal mucosa is removed, although a short segment of rectal muscle stripped of its mucosa may be left in place. A reservoir (pouch) created from terminal ileum is then anastomosed in the anal mucosa. Restorative proctocolectomy was first performed in 1978, and long-term outcome data are now becoming available. The operative mortality of the procedure approaches zero, and the incidence of pelvic sepsis should be less than 5%. The most common cause for reoperation remains small bowel obstruction. Patients who undergo restorative proctocolectomy can expect to have five to six bowel movements per 24-hour period, including one movement at night. Most patients (95%) have satisfactory daytime continence, although about 20% will have nocturnal soiling. Pouchitis, nonspecific inflammation of the reservoir, occurs

in 10% to 20% of patients. Pouch function improves over the first 18 months after the operation, and about 90% of patients are able to return to work.

In all studies of long-term outcome, operative complications diminish and the functional results improve with experience. This reflects both a learning curve for this complex operation and the effect of the technical refinement of the procedure. The following lessons were learned from the early experience:

- Preserving a short rectal muscular cuff of about 2 cm diminishes the risk of postoperative complications. A lengthy mucosectomy, which is associated with the long-term impairment of anal sphincter function, is therefore unnecessary.
- Using the shortest possible efferent limb prevents problems with pouch emptying.
- Bladder and sexual function is best preserved with the use of a perimuscular dissection technique (pelvic dissection proceeds anterior to the superior rectal artery).
- Restorative proctocolectomy may be done safely in selected patients without a protecting ileostomy. Because of the profound consequences of postoperative pelvic sepsis, however, many surgeons continue to routinely use a temporary ileostomy.
- Many malfunctioning pelvic pouches may be salvaged through a remedial operation.
- No specific pouch design—J versus S versus W and so forth—appears to be consistently superior.

Despite considerable limitations, restorative proctocolectomy has made surgical cure acceptable to a large number of patients with chronic ulcerative colitis. Lessons learned in the past 13 years have substantially improved the likelihood of a successful outcome.

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Efficacy of Carotid Endarterectomy in Randomized Trials

CAROTID ENDARTERECTOMY is designed to reduce the risk of stroke in patients with extracranial cerebrovascular disease. Its efficacy has recently been challenged on the basis that communitywide studies show operative morbidity and mortality to be unacceptably high, offsetting potential benefits. Retrospective reviews of the literature comparing the results of the operation with natural history studies show clear benefit, but such studies are subject to selection bias and are generally discounted by the scientific community. The net result of this controversy has been uncertainty in the medical community concerning referring patients for the operation. If the operation is of value, it is being withheld from patients who may benefit. If it is not of value, then it is being done in patients who may suffer surgical consequences without deriving benefit.

Efforts are now under way to answer the clinical questions concerning efficacy. The Department of Veterans Affairs and the National Institutes of Health (NIH) are sponsoring separate prospective randomized trials in patients with symptomatic and asymptomatic carotid stenoses. The VA asymptomatic study will be completed shortly, and the NIH asymptomatic trial is well under way.

The value of the prospective randomized trial was recently highlighted by a "clinical alert" issued by the NIH on February 25, 1991, concerning the North American Symptomatic Carotid Endarterectomy Trial. This multi-institutional study was begun about three years ago to determine if symptomatic patients (those with transient ischemic attacks or previous mild stroke) with ipsilateral carotid stenosis (30% to 99%) will have fewer fatal and nonfatal strokes after a carotid endarterectomy than patients treated with medical management, including the use of aspirin, alone. The NIH stopped the portion of the trial dealing with high-grade stenoses (70% to 99%) after only 18 months because surgical treatment was found to be so efficacious that a statistically significant end point was reached. The operation reduced the risk of stroke by 71% and that of death by 58% when compared with medical management, including aspirin antiplatelet therapy. The NIH recommended that patients with symptomatic carotid stenoses in the 70% to 99% range who are acceptable risks for the operation be treated with carotid endarterectomy. Implicit in this recommendation is that the operation be carried out by competent surgeons whose morbidity and mortality rate for stroke is less than 5%. The net result of this study is that a definitive answer has been reached, and the debate concerning the efficacy of carotid endarterectomy for symptomatic high-grade stenosis is put to rest.

If the medical profession will support the trials of asymptomatic carotid stenosis and symptomatic low-grade stenosis (30% to 69%) by referring patients to participating centers, a definitive answer in the remaining patient categories will be forthcoming.

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Surgical Treatment of Hemoptysis

BRONCHITIS IS THE MOST common single cause of bronchial bleeding. Massive hemoptysis, frequently defined as 600 ml of bleeding or more in 48 hours, is caused about 60% of the time by inflammatory lesions. Tuberculosis, bronchiectasis, lung abscess, fungus infection, and pneumonia are likely causes of massive bleeding. Less than 10% of cases of massive hemoptysis are the result of bronchogenic carcinomas because lung cancer that bleeds usually produces blood-streaked sputum. Carcinoid tumors are uncommon, but they are important considerations when hemoptysis occurs because they may be invisible with plain chest radiographs or computed tomographic scans. These endobronchial or endo-